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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,407	06/23/2003	Audis C. Byrd	HES 2003-IP-009687U1	7729
29920	7590	05/04/2005	EXAMINER	
JOHN W. WUSTENBERG P.O. BOX 1431 DUNCAN, OK 73536			FULLER, BRYAN A	
			ART UNIT	PAPER NUMBER

3672

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,407

Applicant(s)

BYRD ET AL.

Examiner

Bryan A. Fuller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29 - 31, & 33 - 41 is/are allowed.
- 6) ☒ Claim(s) 1 - 13, 20 - 28, & 32 is/are rejected.
- 7) ☒ Claim(s) 14 - 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/17/03 & 10/25/03</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 32 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 32 claims that the wellbores are separated from each other by a distance but then gives a limit to the distance in acres. Distance suggests a single dimension measurement whereas acres are a multi-dimensional measurement for area.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 8, 10, 20 - 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Holloway, Jr. (3,754,598).

With respect to claims 1 – 8, 10, 20 - 26: Holloway, Jr. teaches in column 1, line 3 – column 2, line 56 a method of passing flooding fluid through a hydrogen-containing formation, transmitting oscillatory pressure waves outwardly through the formation while injecting the flooding fluid. The reference teaches that this injection method is equipped

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for passing flooding fluid from the surface. By continually injecting fluid down the well a positive pressure is maintained in the formation. The pressure waves passing through the formation causes the fluid positioned within the pore spaces of the formation to be forced therefrom.

The reference teaches the method of having preselected amplitudes in the range of about 10 to 5,000 psi. The reference teaches the use of frequencies in the range of about 0.001 Hz to 25 Hz. The reference method has the ability to alter the amplitude and frequency of the pressure waves for more efficiently recovering hydrocarbons from a subterranean hydrocarbon-containing formation.

The reference teaches in Figure 1, a production well that is equipped for producing fluids entering the well.

5. Claims 1 – 4, 6 – 8, 10, 20, 22 – 26 are rejected under 35 U.S.C. 102(a) as being anticipated by Davidson et al (6,241,019).

With respect to claim 1, 3, & 10: Davidson et al teaches in column 9, line 8 – column 12, line 28 a system that keeps a well completely liquid filled between the pulsing device and the formation. By continually injecting fluid down the well a positive pressure is maintained in the formation. The system in Davidson et al shows an example in Figure 9 of a pressure pulsing device that causes a periodic pressure excitation at a controllable frequency and amplitude.

With respect to claims 4, 6 - 8, 20, 22 - 23: Davidson et al teaches that the amplitude and frequency of the dynamic excitation can be varied to find the optimum values required to maximize the dynamic enhancement effect. The reference teaches

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in column 15, lines 21 – 25 that each perturbation is assumed to be of an elastic nature, which does not produce any residual, irreversible deformation. The reference also teaches in column 15, lines 43 – 44 a frequency of pulsing in the range of 1 Hz to 10 Hz.

With respect to claims 2 & 24 – 26: Davidson et al teaches that the pulsing can be generated by a surface pressure pulsing system in a casing embedded in the upper part of the wellbore.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holloway, Jr. or Davidson et al in view of Johnson (5,836,393).

With respect to claim 9: Holloway, Jr. and Davidson et al each teach the features as previously described. Neither Holloway, Jr. nor Davidson et al teach a method having an amplitude that is sufficient to fracture the subterranean formation. Johnson teaches in column 4, lines 12 – 15 a pressure pulse device that uses an amplitude that fractures the formation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Holloway, Jr. or Davidson et al in view of Johnson and use an amplitude that was sufficient to fracture the formation.

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Johnson taught that fracturing the formation with a pressure pulse led to the “best stimulation.”

8. Claims 11 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holloway, Jr. or Davidson et al in view of Conally (5,244,362).

With respect to claims 11 - 13: Holloway, Jr. and Davidson et al each teach the features as previously described. Neither Holloway, Jr. nor Davidson et al teach the injection means comprising a positive head device, positive displacement device, or a pump. Additionally, neither Holloway, Jr. nor Davidson et al teach a pressure pulsing system that comprises a housing, a plunger disposed in the housing, a power source for moving the plunger within the housing, a fluid injection port through which the fluid is supplied into the housing, and an outlet port through which the fluid exits the housing. Conally teaches in column 2, line 17 – column 4, line 23 a pressure pulsing system that has a piston rod or plunger disposed in a cylinder. The cylinder is supplied with fluid through a pump inlet and the fluid exits through a pump outlet. The plunger is powered by a gas that drives the piston attached to the plunger. This overall system is a pump that is a positive head or positive displacement device. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Holloway, Jr. or Davidson et al in view of Conally and used the pressure pulsing system as described in Conally because it is capable of handling any fluid, by which is meant gas, liquid or a mixture thereof.

9. Claims 27 & 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holloway, Jr. or Davidson et al in view of Stowe, III (5,056,597).

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With respect to claim 27: Holloway, Jr. and Davidson et al each teach the features as previously described. Neither Holloway, Jr. nor Davidson et al teach a network of conduits connecting the pressure pulsing system to a plurality of wellbores. Stowe, III teaches in column 1, line 60 – column 2, line 65 a steam injection system for multiple well injection from a common header through steam lines. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Holloway, Jr. or Davidson et al in view of Stowe, III and develop a pressure pulsing system that is connected to a plurality of wellbores because Stowe, III discovered that one could get a “remarkably high uniformity” of distribution to the multiple wellbores.

With respect to claim 28: This is an obvious design expedient that would be based on the formation parameters and the distance between the wellbores at a particular production site. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Holloway, Jr. and Davidson et al in view of Stowe, III and develop a pressure pulsing system that is connected to a plurality of wellbores within the respective area that encapsulates the wellbores.

Allowable Subject Matter

10. Claims 14 – 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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11. Claim 32 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
12. Claims 29 – 31 & 33 – 41 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan A. Fuller whose telephone number is (571) 272-8119. The examiner can normally be reached on M - Th 7:30 - 5:00 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on (571) 272-6999. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David J. Bagnell
Supervisory Patent Examiner
Art Unit 3672

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